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EXAMINER

CHORBAJI, MONZER R

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| ART UNIT | PAPER NUMBER |
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1744

DATE MAILED: 04/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/773,438

Applicant(s)

SALBILLA, DENNIS L.

Examiner

MONZER R. CHORBAJI

Art Unit

1744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17, 27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) 2-4, 7-11, 13 and 16-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 6, 12, 14, 15, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This final action is in response to the amendment received on 02/08/2005

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 and 27-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In amended claim 1, lines 4-5, applicant recites the phrase "wherein said electric charge is applied substantially continuously throughout said process". After considering the applicant's support for such a feature, it is inherent that whether explicitly recited or not in the specification that a time interval is needed to reduce the amount of fouling in the hydrocarbon stream. However, the specification does not teach whether the application of the electric charge during this inherent time interval is substantially continuous or intermittent.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claim 27 recites the limitation "said process" in line 11. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 28 is rejected under 35 U.S.C. 102(b) as being anticipated by Carson (U.S.P.N. 4,505,758).

With respect to claim 28, the Carson reference discloses an apparatus (col.2, lines 12-15) for cleaning heat exchangers in oil refining plants (56-60) including applying an electric charge to hydrocarbon fluid streams (col.2, lines 12-15 and lines 58-60) by flowing the stream past the electric charge. The Carson reference applies electric charge to heat exchangers in the field of oil refineries such that the apparatuses involving catalytically cracking and subsequent processing of crude oil are all inherent features of refineries that result in an improved hydrocarbon processing efficiency. For example, the Carson reference provides an example of applying electrical charge to a heat exchanger receiving hydrocarbon liquid stream after being processed by hydrocracking apparatus (col.3, lines 63-68 and col.4, lines 1-7). Furthermore, the Carson reference cleans a portion of the cooler, i.e., heat exchanger, (for example, the tubes 4 in figure 1) by simultaneously applying current to a number of tubes substantially continuous over a time interval that is less than 5 minutes (col.3, lines 41-44 and lines 55-62). See also, col.4, lines 53-60 in the Carson reference where over a time interval, the electric charge is applied to a portion of the heat exchanger.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 1, 5-6, 12 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carson (U.S.P.N. 4,505,758) in view of Harms (U.S.P.N. 3,933,606).

With respect to claims 1 and 27, the Carson reference discloses a method and an apparatus (col.2, lines 12-15) for cleaning heat exchangers in oil refining plants (56-60) including applying an electric charge to hydrocarbon fluid streams including intrinsic contaminants such as coronene (col.2, lines 12-15, lines 58-60 and col.4, lines 8-9) by flowing the stream past the electric charge. The Carson reference applies electric charge to heat exchangers in the field of oil refineries such that the steps and apparatuses involving catalytically cracking and subsequent processing of crude oil are all intrinsic features of refineries that result in an improved hydrocarbon processing efficiency. In addition, the Carson reference applies electric charge while flowing the

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hydrocarbon streams. Furthermore, the Carson reference cleans a portion of the cooler, i.e., heat exchanger, (for example, the tubes 4 in figure 1) by simultaneously applying current to a number of tubes substantially continuous over a time interval that is less than 5 minutes (col.3, lines 41-44 and lines 55-62). See also, col.4, lines 53-60 in the Carson reference where over a time interval, the electric charge is applied to a portion of the heat exchanger. This time interval for cleaning a portion of the heat exchanger (tubes) is equivalent to the method of reducing fouling of process components since, the Carson reference teaches that in certain types of coolers the only part required to be treated are the tubes (col.3, lines 17-20 and lines 37-40). However, with respect to claims 1 and 27, the Carson reference fails to teach the step of adjusting the magnitude of the electric charge. The Harms reference, which is in the art of treating contaminated water by electrolytically removing suspended and dissolved impurities, teaches that it is known to vary the magnitude of the electrical charge applied to the fluid in order to affect a desired degree of contaminant removal depending upon the composition of the water being treated (col.5, lines 57-61). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of the Carson reference to include an electric charge magnitude adjustment step as taught in the Harms reference in order to affect a desired degree of contaminant removal in the fluid being treated (col.5, lines 57-61).

With respect to claims 5-6 and 12, the Carson reference discloses the following: applying an electric charge to a heat exchanger (abstract), applying an electric charge

to the shell of a heat exchanger (figure 1, 4 and 13-14) and applying a constant electric charge (col.4, lines 15-18).

10. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carson (U.S.P.N. 4,505,758) in view of Harms (U.S.P.N. 3,933,606) as applied to claim 1 and further in view of Sivavec et al (U.S.P.N. 6,451,210).

With respect to claims 14-15, both the Carson reference and the Harms reference fail to disclose a step for determining the level of the contaminants in the liquid hydrocarbon stream. The Sivavec reference, which is in the art of treating a contaminated liquid streams (col.2, lines 32-36), teaches the use of a sensing module to detect the level of contaminants in such streams. The Sivavec reference further teaches that once the concentration has been determined the liquid is passed to an adsorption zone, which can include a filter or precipitation unit. A turbidity-sensing unit can be used to direct and aqueous VOC stream to a filter or precipitation unit, prior to carbon bed treatment. Other treatment processes include ion exchange beds, air stripping columns and filters (col.2, line 30 to col.3, line 25). This reference has been relied upon to teach that it is known to measure the concentration of contaminants prior to treatment in order to determine the correct type of treatment. As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of the Carson reference to include a step of measuring the contaminant concentration in the fluid stream in order to determine the correct treatment parameters as taught by the method of the Sivavec reference.

Response to Arguments

11. Applicant's arguments filed 02/08/2005 have been fully considered but they are not persuasive.

On page 9 of the Remarks section, applicant argues that, "It is for this reason that Carson '758 uses short, intermittent applications of voltage." The examiner disagrees. The Carson reference refers to cleaning various portions of a heat exchanger over short time intervals. For example, applying electric charge to the tubes over a time interval then switch power and apply electric current to another portion of the heat exchanger over a time interval (col.4, lines 51-60) such that in the process of cleaning the tube portion of the heat exchanger, the electric current is applied substantially continuous. Each portion of the heat exchanger can be considered a treatment method of fouling reduction of process components within a liquid hydrocarbon stream. Thus, this time interval for cleaning a portion of the heat exchanger (tubes) is equivalent to the method of reducing fouling of process components since, the Carson reference teaches that in certain types of coolers the only part required to be treated are the tubes (col.3, lines 17-20 and lines 37-40).

On page 10 of the Remarks section, applicant recites that, "Clearly, the specification is teaching that since fouling develops over time, the application of the charge should be on or substantially close to, spanning the time frame of the potential fouling." The examiner disagrees. This recited section of the specification teaches applying electric current inherent time not substantially continuous and not specifying time range values for such an application. For example, the current can be substantially

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continuously applied just like the Carson reference over 4 minutes and still prevent or significantly reduce the frequency of maintenance as described in the specification.

On page 10 of the Remarks section, applicant argues that unlike the Carson reference, which is the only reference concerned with hydrocarbon-based processes, the Harms reference is concerned with contaminated water streams. The Harms reference is in the art of applying electric current across fluid stream, i.e., contaminated water, which is the method used by the instant claims. Thus, the Harms reference is in the same field of art like the Carson reference and like the current claims.

On page 11 of the Remarks section, applicant argues that, "Because Carson '758 teaches away from the presently pending claims, it is inappropriate to combine Carson '758 with Harms '606 for a proper rejection under 35 USC 103(a)." The examiner disagrees. As explained above, both references are in the same art, which is decontaminating fluids by using an electric field. The Harms reference is combined with the Carson reference only for showing that the step of adjusting the magnitude of the electric charge is known along with the benefit for doing so as provided in the Harms reference in col.5, lines 57-61.

On pages 11-12 of the Remarks section, applicant argues that, "Sivavec '210 is silent as to the nature of the stream to be cleaned, but fails to teach the use of application of a voltage or a current to a piece of process equipment to prevent the fouling thereof." The examiner disagrees. The Sivavec reference is in the art of decontaminating fluid streams (col.2, lines 32-36). The Sivavec reference is combined

only to show that contaminants sensing means are known in the art of treating fluids and not for another feature.

The Carson reference teaches that the current applied to the tubes depends on various factors (col.3, lines 43-57) including the type of material used for the tubing. For example, if deposits require higher melting temperature then the current can be adjusted to be low or high value thus resulting in longer or shorter time treatment intervals. Also, in col.4, lines 34-42, the Carson reference teaches that some fluids temperatures can be increased by 100 degree Celsius. This teaching, depending on if the electric current is of low or high value, can affect the amount of time intervals for treating portions of a heat exchanger.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

13. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. This application contains claims 2-4, 7-11, 13 and 16-17 drawn to an invention nonelected with traverse in Paper No. 02/16/2004. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 6:30-3:00.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN KIM can be reached on (571) 272-1142. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monzer R. Chorbaji *MRC*
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04/19/2005

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